

6. Please replace the paragraph beginning at page 10, line 12 with the following rewritten paragraph:

B<sup>7</sup>

- - The vacuum chambers 4a, 4b, and 4c each comprise a base 21a, 21b, and 21c respectively, which supports the internal chamber conveyor 5a, 5b, and 5c respectively, and a cover 22a, 22b, and 22c respectively having circumferential hanging walls 23a, 23b, and 23c respectively, which in use form the side walls of the closed vacuum chambers 4a, 4b, and 4c respectively. Various elements (not shown) are attached to the covers 22a, 22b, and 22c including vacuum pipes, electrical tables and pneumatic pipes. The covers 22a, 22b, and 22c are fixed to the body 3, whereas base 21a, 21b, and 21c are arranged to reciprocate vertically to open and close vacuum chambers 4a, 4b, and 4c respectively. This means it is unnecessary to move the elements attached to covers 22a, 22b, and 22c which enables a simpler design and also speeds up opening and closing. When closed, base 21a, 21b, and 21c seals against the hanging walls 23a, 23b, and 23c respectively of covers 22a, 22b, and 22c respectively to maintain the vacuum during vacuumization. Respective pairs of guide frames 52a, 52b, and 52c are fixed to the body 3 to guide the vertical movement of base 21a, 21b, and 21c respectively. - -

In the Drawings

A revised Figure 1 is attached to this response, in which reference numeral "10" toward the right hand end of the drawing is replaced by "11".

In the Claims

Please amend the claims as follows:

B<sup>8</sup> 22 (amended). A vacuum packaging machine for performing a vacuum sealing operation on product packages, comprising a vertical stack of vacuum chambers each arranged to receive at least one unsealed product package and operable to perform an independent vacuum sealing operation on the at least one product package.

B<sup>9</sup> 42 (amended). A vacuum packaging machine according to claim 41, wherein each vacuum chamber comprises a base and a cover disposed vertically above the base, wherein the cover is fixed and the base is vertically movable to open and close the vacuum chamber.

Remarks

In the Claims

Claims 22 to 42 remain in the application.

Claims 22 and 42 have been amended.

### Claim Objections

On page 2 of the Office Action, at paragraph 1, claim 42 was objected to as being in improper form because a claim can not depend from a canceled claim.

Applicants apologize for this oversight, and have amended claim 42 to now be depend on claim 41.

### Specification

On page 2 of the Office Action, at paragraph 2, the disclosure was objected to because on page 8, line 15, "46" should be - - 4b - -.

In response to this objection, the paragraph beginning at page 8, line 10 of the specification has been amended to correct this typo.

Applicants also note that the paragraph beginning at page 6, line 18 refers to "sealed packages 9" but the reference numeral 9 properly refers to the out-feed conveyor. The language of the text has thus been amended to recite simply "sealed packages".

### Drawings

On page 2 of the Office Action, at paragraph 3, the drawings were objected to because reference character "10" has been used to designate both input and output conveyors in Figure 1.

Attached is a proposed, revised Figure 1, in which reference numeral "10" toward the right hand end of the drawing is replaced by "11". This change is shown in red. A formal drawing to replace Figure 1 with this revised drawing will be prepared and forwarded to the PTO.

On page 2 of the Office Action, at paragraph 4, the drawings were objected to because they include the following reference characters not mentioned in the description: 52a, 52b, 52c in Figure 6, and 6a, 6b, 7a, and 7b in Figure 2.

As suggested in the Office Action, the specification has been amended to add the reference signs in the description.

On page 2 of the Office Action, at paragraph 5, the drawings were objected to because they include the following reference characters mentioned in the description: 6 and 7 as recited on page 6, line 2, and 5 as recited on page 5, line 27.

In response to this objection, the specification has been amended, in the paragraphs beginning at page 6, line 2, and at page 5, line 27, to refer instead to the reference numerals 6a, 6b, 6c, and 6d, and 5a, 5b, 5c, and 5d. Reference numerals 6a and 6b appear in the

drawings at Figure 2; reference numerals 5a, 5b, 5c appear in the drawings at Figure 6. The original specification discloses that each vacuum chamber 4 has an internal chamber conveyor 5, and that in the arrangement illustrated in Fig. 5, there are four vacuum chambers, 4a, 4b, 4c, and 4d. (See page 5, lines 21 to 26). These are shown in Fig. 5. There will therefore be four respective internal chamber conveyors, three of them already labeled in Figure 6.

Likewise, the original specification discloses that each chamber has a respective entrance 6 and exit 7 (see page 6, line 2). Entrances 6a and 6b are shown in Figure 2 for the two chambers depicted there. There will therefore be four respective entrances 6a, 6b, 6c, and 6d for an embodiment with four chambers. The specification has been accordingly amended.

#### 35 U.S.C. §112

On page 3 of the Office Action, claims 22 to 42 were rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Applicants apologize for the typographical error of original claim 22. Claim 22 has now been amended to recite "and operable to perform an independent vacuum sealing operation" where "and" has been replaced with "an". Support for this amendment can be found at page 1 line 24 of the specification. Applicants respectfully submit that claim 22 as amended meets the requirements of 35 U.S.C. §112.

#### 35 U.S.C. §102

On pages 3 and 4 of the Office Action, paragraphs 8 and 9, claims 22 to 26, 32, 38 and 39 were rejected under 35 U.S.C. §102 (b) as being anticipated by Furukawa (US Patent No. 4,869,050).

Applicants respectively traverse to the extent this rejection is applied to the claims as presented.

Furukawa does not disclose a vertical stack of vacuum chambers. The present application indicates that "since the vacuum chambers 4 are stacked vertically, they only occupy the same floor space as a single vacuum chamber" (page 5, lines 16-18). Vertically stacked vacuum chambers are illustrated in Figures 2 to 5 of the application. Therefore, "vertically stacked" means one on top of the other, like the floors in a building; not necessarily one touching the other, as they might be movable vertically, one independ-

ently of the others, and therefore in some cases needing some room to move up and down, but still one over the other.

In Furukawa, what is described is a rotor, rotatable in a vertical plane around a horizontal axis, having suspended a plurality of vacuum chambers to the rotor arms. It is true that if you have an even number of chambers suspended on the rotor edge, you might have one instant where one of the rotating vacuum chambers is "over" another one (see for instance in the figure on the cover page of the Furukawa patent, the chambers on the right top and right bottom side) and this configuration may be viewed by the Examiner as a configuration comprising a vertical stack of some of the vacuum chambers. However, as the rotor moves, these vacuum chambers will no longer be "vertically stacked". Thus Furukawa does not describe "a packaging machine for vacuum sealing comprising a vertical stack of vacuum chambers" because *if the rotor is blocked in the configuration where two of the vacuum chambers are one over the other* (the instant in time referred to above), *then it will not be able to perform the loading/vacuumizing/sealing/unloading cycle and therefore it will not be a packaging machine.*

The machine described in Furukawa corresponds to a conventional horizontal rotary Furukawa machine where the axis around which the wheel bearing the vacuum chambers rotates has been tilted by 90°.

Furukawa does not teach, or suggest, stacking vacuum chambers vertically and fitting the stack with conveyors where the vertical movement of either the conveyors or the vacuum chambers optimize the overall process reducing the waste time.

Also, the Furukawa machine does not give the advantages obtained with the present invention (increase in productivity without significant increase in the floor area) as the rotating wheel takes a lot of floor space. To illustrate this, the Examiner is invited to compare visually the space occupied by one vacuum chamber in the Furukawa patent with the space required to rotate the wheel.

### 35 U.S.C. §103

On page 4 of the Office Action, paragraphs 10 and 11, claims 30, 31, 40, and 41 were rejected under §103(a) as being unpatentable over Furukawa (U.S. Patent No. 4,869,050) as applied to claims 22 and 26, in view of Mugnai (US 4,471,599).

Applicants respectively traverse to the extent this rejection is applied to the claims as presented.

In Mugnai, a conveyor internal to the vacuum chamber is present, however Mugnai does not make any hint to the possibility of combining a number of vacuum chambers and particularly of vertically stacking them.

On page 5 of the Office Action, paragraph 12, claims 27 to 29, and claims 33 to 37 were rejected under §103(a) as being unpatentable over Furukawa (U.S. Patent No. 4,869,050) as applied to claims 26 and 32 above, in view of Bonnet (US 6,227,377).

Applicants respectively traverse to the extent this rejection is applied to the claims as presented.

Bonnet, which has been combined with Furukawa '050 to show the multiple conveyors and the vertical movement thereof, does not suggest the use of multiple conveyors and mainly does not suggest the use of conveyors that vertically move, Bonnet describes the use of a **single** conveyor that is pivoted at its receiving end about both a horizontal axis and a vertical axis and thus distributes the articles to the various output destinations. In one embodiment of our invention, the vertically stacked vacuum chambers are fixed and the conveyor or conveyors move "vertically" to match the right vacuum chambers. "Vertically" means that the conveyor or conveyors go up and down, i.e. are raised and lowered, like an elevator, as indicated in Fig.2 to 5, parallel to the ground.

As Furukawa does not anticipate the packaging machine of present claim 1 or suggest a vertical stack of vacuum chambers as required by the present invention, the combination thereof with any of the above ancillary references should not render the sub-claims obvious.

Applicants respectfully ask for allowance of the claims as amended.

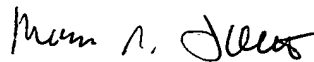
Attached hereto is a marked-up version of the changes made to the specification and/or claims by this amendment. The attached page is captioned "Version with markings to show changes made".

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Version with markings to show changes made.

In the Specification

1. The paragraph beginning at page 5, line 27 has been amended as follows:

- - [Each] The vacuum chambers [4] 4a, 4b, 4c, and 4d [has an] each have a respective internal chamber conveyor [5] 5a, 5b, 5c, and 5d to convey product packages 2 therethrough, and a respective sealing bar 12 arranged along one side of [the] each chamber extending along the corresponding chamber conveyor [5] 5a, 5b, 5c, and 5d. Provision of a sealing bar 12 on the side of [the] each chamber conveyor [5] 5a, 5b, 5c, and 5d facilitates automatic feeding and loading is made easier by the bags being orientated in the same direction. - -

2. The paragraph beginning at page 6, line 2 has been amended as follows:

- - Each chamber has a respective entrance [6] 6a, 6b, 6c, and 6d and exit [7] 7a, 7b, 7c, and 7d. Opening and closing of the vacuum chambers is described in more detail subsequently.- -

3. The paragraph beginning at page 6, line 18 has been amended as follows:

- - A fixed input conveyor 10 is provided to receive unsealed product packages 2 into the machine 1 from station 14 along packaging line 13 and supply them to the in-feed conveyor 8. Another fixed output conveyor 11 receives sealed packages [9] from the out-feed conveyor 9 and outputs them along line 13. - -

4. The paragraph beginning at page 7, line 30 has been amended as follows:

- - As an arbitrary starting point within the cycle, we can take the point at which the vacuum sealing operation in the lower vacuum chamber 4a has just finished. At this time, the vacuum sealing operation in the upper vacuum chamber 4b is underway. The lower vacuum chamber 4a is opened. Next, the fixed conveyors 10, 11, the in-feed and out-feed conveyors 8, 9 and the lower chamber conveyor 5a are simultaneously operated (i) to load lower vacuum chamber 4a with new unsealed product packages 2 from the in-feed conveyor 8, (ii) to unload sealed product packages from the lower vacuum chamber 4a onto the out-feed conveyor 9, and (iii) to supply new unsealed product packages 2 onto the in-feed conveyor 8. Exact synchronization is preferable but some degree of overlap is desirable. The lower vacuum chamber 4a is then closed for commencement of the vacuum sealing operation, that is vacuumization of the chamber 4a and sealing of the product packages 2 by sealing bar 12. - -

5. The paragraph beginning at page 8, line 10 has been amended as follows:

- - During the vacuum sealing operation in the lower vacuum chamber 4a, loading and unloading of the upper vacuum chamber 5 is performed. The out-feed con-

veyor 9 is operated briefly to clear sealed products off it. Then the in-feed and out-feed conveyors 8, 9 are raised to the upper vacuum chamber 4b and when the vacuum sealing operation in the upper vacuum chamber 4b has finished, the upper vacuum chamber [46] 4b is opened. Simultaneous operation of the in-feed and out-feed conveyors 8, 9 and the upper chamber conveyor 5b loads and unloads the upper vacuum chamber 4b. - -

6. The paragraph beginning at page 10, line 12 has been amended as follows:

- - The vacuum chambers [4] 4a, 4b, and 4c each comprise a base [21] 21a, 21b, and 21c respectively, which supports the internal chamber conveyor [5] 5a, 5b, and 5c respectively, and a cover [22] 22a, 22b, and 22c respectively having circumferential hanging walls [23] 23a, 23b, and 23c respectively, which in use form the side walls of the closed vacuum [chamber 4] chambers 4a, 4b, and 4c respectively. Various elements (not shown) are attached to the [cover 22] covers 22a, 22b, and 22c including vacuum pipes, electrical tables and pneumatic pipes. The [cover 22 is] covers 22a, 22b, and 22c are fixed to the body 3, whereas [the base 21 is] base 21a, 21b, and 21c are arranged to reciprocate vertically to open and close vacuum [chamber 4] chambers 4a, 4b, and 4c respectively. This means it is unnecessary to move the elements attached to [the cover 22] covers 22a, 22b, and 22c which enables a simpler design and also speeds up opening and closing. When closed, [the base 21] base 21a, 21b, and 21c seals against the hanging walls [23] 23a, 23b, and 23c respectively of [the cover 22] covers 22a, 22b, and 22c respectively to maintain the vacuum during vacuumization. Respective pairs of guide frames [52] 52a, 52b, and 52c are fixed to the body 3 to guide the vertical movement of [each] base [21] 21a, 21b, and 21c respectively. - -

#### In the claims

The claims have been amended as follows:

22 (amended). A vacuum packaging machine for performing a vacuum sealing operation on product packages, comprising a vertical stack of vacuum chambers each arranged to receive at least one unsealed product package and operable to perform [and] an independent vacuum sealing operation on the at least one product package.

42 (amended). A vacuum packaging machine according to claim [20] 41, wherein each vacuum chamber comprises a base and a cover disposed vertically above the base, wherein the cover is fixed and the base is vertically movable to open and close the vacuum chamber.